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EXAMINER

DAVIS, MARY ALICE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/790,827	Applicant(s) TAKAGI ET AL.	
	Examiner MARY A. DAVIS	Art Unit 3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 August 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4,6-16 and 18-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4,6-16 and 18-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The Non-Final Office Action dated August 27, 2008 was based on the amendment filed on June 3, 2008. Due to the August 27, 2008 supplemental amendment being filed on the same date as the Non-Final Office Action, the Office Action dated August 27, 2008 is vacated. A new Office Action is provided below in response to the August 27, 2008 supplemental amendment.

Election/Restrictions

2. An Election of the Species was made to Figures 3, 4A-4C, and 9A-9C. Applicant's arguments filed June 3, 2008 were persuasive, and therefore, claims 3, 4, 11-13, 22, and 23 are hereby rejoined and fully examined for patentability under 37 CFR 1.104.
3. Because all claims previously withdrawn from consideration under 37 CFR 1.142 have been rejoined, **the restriction requirement as set forth in the Office action mailed on October 24, 2007 is hereby withdrawn.** In view of the withdrawal of the restriction requirement as to the rejoined inventions, applicant(s) are advised that if any claim presented in a continuation or divisional application is anticipated by, or includes all the limitations of, a claim that is allowable in the present application, such claim may be subject to provisional statutory and/or nonstatutory double patenting rejections over the claims of the instant application. Once the restriction requirement is withdrawn, the provisions of 35 U.S.C. 121 are no longer applicable. See *In re Ziegler*, 443 F.2d 1211, 1215, 170 USPQ 129, 131-32 (CCPA 1971). See also MPEP § 804.01.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-4, 6-16, and 18-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The currently amended independent claims 1 and 16 include the limitation directed to "a fluid resistance between the first through hole and the second through hole is variable during a printing operation and a purging operation". During a printing operation the rotor is disclosed not to be rotating, and therefore, how can the fluid resistance between the first through hole and the second through hole be variable? Furthermore, claims 1-4, 6-16, and 18-21 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The applicant has amended the limitation to read "a fluid resistance between the first through hole and the second through hole is variable during a printing operation and a purging operation". The claim does not disclose how the fluid resistance is varied, and the Examiner has construed by the rotation of the rotor, the fluid resistance is varied between the first and second through hole. The claim is missing what causes the resistance to be variable. During the printing operation the rotor is not rotating and the first through hole and second through hole are in fluid communication with one another. During the purging operation, the fluid communication between the first through hole and the second through hole is closed due to the rotor is

rotated so that the rotor contacts the case. The Examiner recommends changing the limitation to include these limitations, so that it is clear what the applicant means by the “fluid resistance is variable”, as well as, what is structurally different during the printing operation versus the purging operation.

6. Claims 22-25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Independent claim 22 recites the limitation to “**can** (emphasis added) selectively move”. Does it selectively move or not?

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-2 are rejected under 35 U.S.C. 102(b) as being anticipated by any one of the following NAKAMURA (European Patent Application EP-0933532-A2), OSTBERG (World Intellectual Property Application Number WO 98/42984), and ADORJÁN (World Intellectual Property Application Number WO 98/03794), as currently understood by the Examiner.

Claims 6-9, 15, and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by OSTBERG, as currently understood by the Examiner.

Regarding claim 1, NAKAMURA, OSTBERG, and ADORJÁN disclose:

- A pump, comprising:

- a case ((1) of NAKAMURA; (2) of OSTBERG; (10) of ADORJÁN) having a hollow inside (see Figures 2-4 of NAKAMURA; see Figures 2, 4, 6, and 8-9 of OSTBERG; see Figures 1 and 4 of ADORJÁN) defined by an inner wall surface (see Figures 2-4 of NAKAMURA; (10, 11) of OSTBERG; (13, 16) of ADORJÁN) thereof and including a first through hole ((K) of NAKAMURA; (4) of OSTBERG; (14) of ADORJÁN) through which fluid is sucked in the hollow (see Figure 2 of NAKAMURA; see Figures 2, 4, 6, and 8-9 of OSTBERG; see Figures 1 and 4 of ADORJÁN) and a second through hole ((D) of NAKAMURA; (5) of OSTBERG; (15, 17) of ADORJÁN) through which the fluid is ejected from the hollow (see Figure 2 of NAKAMURA; see Figures 2, 4, 6, and 8-9 of OSTBERG; see Figures 1 and 4 of ADORJÁN);
- a rotor ((4) of NAKAMURA; (3) of OSTBERG; (20) of ADORJÁN) that is rotatable in the hollow and having a rotary shaft ((10) of NAKAMURA; (18) of OSTBERG; (20) of ADORJÁN) and a through groove ((4B) of NAKAMURA; see Figures 2, 4, 6, and 8-9 of OSTBERG which shows a through groove in which the partition (12) slides in; (22) of ADORJÁN) formed on the rotor in a direction across the rotary shaft (see Figures 2-4 of NAKAMURA; see Figures 2, 4, 6, and 8-9 of OSTBERG; see Figures 1 and 4 of ADORJÁN); and
- a partition ((7) of NAKAMURA; (12) of OSTBERG; (21, 30) of ADORJÁN) supported in the through groove slidably in the direction across the rotary shaft (see Figures 2-4 of NAKAMURA; see Figures 2, 4, 6, and 8-9 of OSTBERG; see Figures 1 and 4 of ADORJÁN), the partition being rotatable with the rotor with at

least both ends of the partition, with respect to the direction across the rotary shall, in constant contact with the inner wall surface defining the hollow upon rotation of the rotor, wherein:

- the hollow is partitioned into a plurality of chambers each enclosed by the case, the rotor, and the partition member (see Figures 3a-3D of NAKAMURA and Column 7, ¶0028 – Column 8, ¶0033; see Figures 2, 4, 6, and 8-9 of OSTBERG and Page 8, line 10 – Page 10, line 8; see Figures 1 and 4 of ADORJÁN and Page 7, line 20 – Page 9, line 24), and
- the pump is structured such that when the first through hole and the second through hole are on a same side with respect to the partition, a fluid resistance between the first through hole and the second through hole is variable (see Figures 3A-3B of NAKAMURA and Column 7, ¶0028 – Column 8, ¶0033; see Figures 2, 4, 6, and 8-9 of OSTBERG and Page 8, line 10 – Page 10, line 8 (it is inherent that the first through hole (inlet) and the second through hole (outlet) have different fluid resistances because the fluid has been compressed and forced to move from the first position to the second position due to the rotational movement of the rotor and partition); see Figures 1 and 4 of ADORJÁN and Page 7, line 20 – Page 9, line 24) during a printing operation and a purging operation (“during a printing operation and a purging operation” is an intended use recitation. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the

prior art structure is capable of performing the intended use, then it meets the claim. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCCPA 1963) NAKAMURA, OSTBERG, and ADORJÁN are capable of operating during a printing operation and a purging operation. Where in both operations, the rotor is rotating).

Regarding claim 2, NAKAMURA, OSTBERG, and ADORJÁN disclose:

- the rotor is rotatable and in constant or intermittent contact with the inner wall surface defining the hollow (see Figures 3A-3D of NAKAMURA and Column 7, ¶0028 – Column 8, ¶0033; see Figures 2, 4, 6, and 8-9 of OSTBERG and Page 8, line 10 – Page 10, line 8; see Figures 1 and 4 of ADORJÁN and Page 7, line 20 – Page 9, line 24), and when the rotor is at least in contact with the inner wall surface, the first through hole and the second through hole are present in different chambers (see Figures 3A-3D of NAKAMURA and Column 7, ¶0028 – Column 8, ¶0033; see Figures 2, 4, 6, and 8-9 of OSTBERG and Page 8, line 10 – Page 10, line 8; see Figures 1 and 4 of ADORJÁN and Page 7, line 20 – Page 9, line 24).

Regarding claim 6, OSTBERG discloses:

- the fluid resistance is changed when the rotor is moved between a position making contact with the inner wall surface defining the hollow and a position where the rotor does not make contact with the inner wall surface (see Figures 2, 4, 6, and 8-9 and Page 8, line 10 – Page 10, line 8).

Regarding claim 7, OSTBERG discloses:

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- the fluid resistance is changed when a part of the inner wall surface defining the hollow is moved between a position making contact with the inner wall surface defining the hollow and a position that does not make contact with the inner wall surface (see Figures 2, 4, 6, and 8-9 and Page 8, line 10 – Page 10, line 8).

Regarding claim 8, OSTBERG discloses:

- the rotor has a cut portion on an outer peripheral surface around the rotor (see Figures 2, 4, 6, and 8-9 where the cut portion on the outer peripheral surface of the rotor is at the groove) and the rotor rotates in constant or intermittent contact with a first position of the inner wall surface defining the hollow (see Figures 2, 4, 6, and 8-9 and Page 8, line 10 – Page 10, line 8), and the fluid resistance is changed in accordance with a position of the cut portion changing by rotating of the rotor with respect to the first through hole and the second through hole (see Figures 2, 4, 6, and 8-9 and Page 8, line 10 – Page 10, line 8 (it is inherent that the first through hole (inlet) and the second through hole (outlet) have different fluid resistances because the fluid has been compressed and forced to move from the first position to the second position due to the rotational movement of the rotor and partition), furthermore, the fluid resistance is changed depending on the relative location of the partition).

Regarding claim 9, OSTBERG discloses:

- the rotor has a communication passage (see Figures 2, 4, 6, and 8-9 where the communication passage is at the groove) connecting two places on the outer peripheral surface (see Figures 2, 4, 6, and 8-9) and the rotor rotates in constant

or intermittent contact with a first position of the inner wall surface defining the hollow (; see Figures 2, 4, 6, and 8-9 of OSTBERG and Page 8, line 10 – Page 10, line 8), and the fluid resistance is changed in accordance with a position of the communication passage changing by rotating the rotor with respect to the first through hole and the second through hole (see Figures 2, 4, 6, and 8-9 and Page 8, line 10 – Page 10, line 8 (it is inherent that the first through hole (inlet) and the second through hole (outlet) have different fluid resistances because the fluid has been compressed and forced to move from the first position to the second position due to the rotational movement of the rotor and partition), furthermore, the fluid resistance is changed depending on the location of the partition).

Regarding claim 15, OSTBERG discloses:

- when the rotor is stopped at a rotational position when the pump is not in operation, the rotor has a passage (the passage is formed by the movement of the wall “A”) that provides communication between the first through hole and the second through hole (see Figures 4 and 9 that show a position of the partition and rotor that allows communication between the first and second through hole when the passage is formed by the wall due to the movement shown as “A” in Figure 2).

Regarding claim 24, OSTBERG discloses:

- the rotor and the case are structured such that at least one of the rotor and the case can selectively move between a first position where the rotor and the case

are in contact with each other and a second position where the rotor and the case are separate from each other (see Figures 2, 4, 6, and 8-9 and Page 8, line 10 – Page 10, line 8 that discloses the case selectively moving in the event of excessive pressure or during entrapment of debris).

9. Claim 23 is rejected under 35 U.S.C. 102(b) as being anticipated by BEIDLER ET AL (U.S. Patent 1,952,834).

Regarding claim 23, BEIDLER ET AL discloses:

- A pump, comprising:
- a case (10) having a hollow inside (see Figure 2) defined by an inner wall surface thereof and including a first through hole (12) through which fluid is sucked in the hollow (see Figure 2 and Page 1, lines 38-43) and a second through hole (13) through which the fluid is ejected from the hollow (see Figure 2 and Page 1, lines 38-43);
- a rotor (14) that is rotatable in the hollow and having a rotary shaft (Page 1, lines 43-50) and a first through groove and a second through groove formed on the rotor in a direction across the rotary shaft (see Figure 2, which shows 2 grooves at 90 degrees from one another);
- a partition (19) supported in the first through groove (see Figure 2) slidable in the direction across the rotary shaft (Page 1, lines 43-50), the partition being rotatable with the rotor with at least both ends of the partition member (see Figure 2), with respect to the direction across the rotary shaft, in constant contact with the inner wall surface defining the hollow upon rotation of the rotor

(see Figure 2 that shows the interface of the partition with the inner wall surface, shown as a circle in Figure 2), wherein a first end of the second through groove is adjacent to the first through hole and a second end of the second through groove is adjacent to the second through hole when the rotor is not rotating (see Figure 2 that shows the second through groove containing partition (18) is adjacent the first through hole (12), and the second end opposite the first end is adjacent the second through hole (13). The limitation directed to the condition of "when the rotor is not rotating" is given little weight, since the pump of BEIDLER ET AL is capable of having first end of the second through groove being adjacent to the first through hole and a second end of the second through groove being adjacent to the second through hole when the rotor is not rotating).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over any one of the following: NAKAMURA, OSTBERG, or ADORJÁN in view of COLLINS (U.S. Patent 2,903,971).

NAKAMURA, OSTBERG, and ADORJÁN disclose the claimed invention as discussed above, however, fails to disclose a sliding member that is disposed on each side of the partition, wherein a sliding friction resistance between the sliding member and the

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through groove of the rotor is smaller than a sliding friction resistance between the through groove of the rotor and the partition, and the a length of the sliding member is shorter than a length of the partition member with respect to the direction across the rotor.

Regarding claim 3, COLLINS teaches:

- a sliding member (28, 29) that is disposed on each side of the partition (see Figures 1-4), wherein a sliding friction resistance between the sliding member and the through groove of the rotor is smaller than a sliding friction resistance between the through groove of the rotor and the partition (see Figure 4 and Column 2, lines 46-53 that discloses the sliding member that is disposed on each side of the partition is fixed to the rotor, and therefore, fixed with respect to the rotor groove, and therefore, it is inherent that there is no sliding friction resistance between the sliding member and the groove of the rotor.

Furthermore, the partition (40) reciprocates in the groove (Column 2, lines 61-67), and therefore, the sliding friction between the sliding member and the through groove of the rotor is smaller than a sliding friction resistance between the through groove of the rotor and the partition, since the partition is able to slide in the groove).

Regarding claim 4, COLLINS teaches:

- a length of the sliding member is shorter than a length of the partition member with respect to the direction across the rotor (see Figure 1).

It would have been obvious to a person having ordinary skill in the art at the time of the invention was made to have a sliding member disposed on either side of the partition in the pumps of NAKAMURA, OSTBERG, or ADORJÁN, in order to allow the partition to slide freely, which allows an increased pump efficiency, since the pump does not have to overcome a high resistance to movement of the partition.

12. Claim 10 is also rejected under 35 U.S.C. 103(a) as being unpatentable over any one of the following: NAKAMURA, OSTBERG, or ADORJÁN.

NAKAMURA, OSTBERG, and ADORJÁN disclose the claimed invention, as discussed above, however, fail to disclose the second through hole is formed on the upper vertical side of the case.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the second through hole on the upper vertical side of the case in any of the pumps of NAKAMURA, OSTBERG, or ADORJÁN, in order to allow any gas bubbles to escape from the pump. Furthermore, it has been held that rearranging parts of an invention involves only routine skill in the art.

13. Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over any one of the following: NAKAMURA, OSTBERG, or ADORJÁN in view of MATSUMOTO ET AL (U.S. Patent 6,688,865 B1).

NAKAMURA, OSTBERG, and ADORJÁN disclose the claimed invention as discussed above, however, fails to disclose the partition having the flexibility to bend in a direction opposite to the rotational direction of the rotor in contact with the inner wall surface of the case and closely make contact with the inner wall surface of the case, the partition

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is shaped thinner toward edge portions, and the partition has a first portion formed of a first material that allows the first portion to flexibly deform in contact with the case and a second portion formed of a second material that allows the second portion to deform less flexibly than the first portion, and a friction resistance between the first portion and the rotor is greater than a friction resistance between the second portion and the rotor.

Regarding claim 11, MATSUMOTO ET AL teaches:

- a partition (49) flexibly deform to bend in a direction opposite to the rotational direction of the rotor in contact with the inner wall surface of the case and closely make contact with the inner wall surface of the case (see Figure 13).

Regarding claim 12, MATSUMOTO ET AL teaches:

- the partition is shaped thinner toward edge portions (see Figures 13-14 and 16A-16 D).

Regarding claim 13, MATSUMOTO ET AL teaches:

- the partition has a first portion formed of a first material (55) that allows the first portion to flexibly deform in contact with the case (see Figures 13, and 16A-16D) and a second portion formed of a second material that allows the second portion to deform less flexibly than the first portion (see Figures 13-14, and 16A-16D that shows the first and second materials being different, Column 4, line 66 – Column 5, line 31)), and a friction resistance between the first portion and the rotor is greater than a friction resistance between the second portion and the rotor (see Figure 15).

It would have been obvious to a person having ordinary skill in the art at the time of the invention was made to have the partition having the flexibility to bend in a direction opposite to the rotational direction of the rotor in contact with the inner wall surface of the case and closely make contact with the inner wall surface of the case, the partition is shaped thinner toward edge portions, and the partition has a first portion formed of a first material that allows the first portion to flexibly deform in contact with the case and a second portion formed of a second material that allows the second portion to deform less flexibly than the first portion, and a friction resistance between the first portion and the rotor is greater than a friction resistance between the second portion and the rotor in the pumps of any one of NAKAMURA, OSTBERG, or ADORJÁN, in order to provide sealing for the partition to the hollow. Furthermore, it would have been obvious to one having ordinary skill in the art to utilize the sealing of the partition as taught by MATSUMOTO ET AL in the pumps of NAKAMURA, OSTBERG, or ADORJÁN, since it requires routine skill in the art to combine prior art elements according to known methods to yield predictable results.

14. Claims 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over any one of the following: NAKAMURA, OSTBERG, or ADORJÁN in view of TAKEHIKO (Japanese Patent Publication JP 7-80304 B2).

NAKAMURA, OSTBERG, and ADORJÁN disclose the claimed invention above. In the event that NAKAMURA and OSTBERG fail to disclose the claimed limitations of claim 15, a further rejection is presented below for NAKAMURA and OSTBERG.

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NAKAMURA, OSTBERG, and ADORJÁN also fail to disclose a metal needle having a fluid passage inside connected to the first through hole.

Regarding claim 14, TAKEHIKO teaches:

- a metal needle (16) having a fluid passage inside (see Figure 1) is directly connected to the first through hole (see Figure 1).

Regarding claim 15, TAKEHIKO teaches:

- when the rotor stops at a rotational position when the pump is not in operation, the rotor has a passage that provides communication between the first through hole and the second through hole (see ABSTRACT).

It would have been obvious to a person having ordinary skill in the art at the time of the invention was made to have when the rotor stops at a rotational position when the pump is not in operation, the rotor has a passage that provides communication between the first through hole and the second through hole in any one of the pumps of NAKAMURA, OSTBERG, or ADORJÁN, in order to provide communication in an ink jet printer which operates by negative pressure, and thus, requires an open passage between the first and second through hole. Ink jet printers utilize the pump only to provide ink when the ink level is at a specific location or to purge the system, and thus, it would be obvious to stop the rotor at a position which provides communication between the first and second through holes, so that the pump does not have to rotate in order to print when the ink levels are above a specific location (see ABSTRACT and patent publication of TAKEHIKO).

15. Claims 16, 18 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over any one of the following: NAKAMURA, OSTBERG, or ADORJÁN in view of TAKEHIKO.

Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over OSTBERG in view of TAKEHIKO.

Regarding claim 16, NAKAMURA, OSTBERG, and ADORJÁN discloses the pump as discussed above in claim 1 and further discloses:

- when the first through hole and the second through hole of the pump are on the same side with respect to the partition, a fluid resistance between the first through hole and the second through hole is variable in a first chamber where the first through hole and the second through hole are present out of two chambers that are formed in the hollow partitioned by the partition (see Figures 3A-3D of NAKAMURA and Column 7, ¶0028 – Column 8, ¶0033; see Figures 2, 4, 6, and 8-9 of OSTBERG and Page 8, line 10 – Page 10, line 8 (it is inherent that the first through hole (inlet) and the second through hole (outlet) have different fluid resistances because the fluid has been compressed and forced to move from the first position to the second position due to the rotational movement of the rotor and partition); see Figures 1 and 4 of ADORJÁN and Page 7, line 20 – Page 9, line 24).

Regarding claim 25, OSTBERG discloses the claimed invention as discussed above in claim 24.

However, NAKAMURA, OSTBERG, and ADORJÁN fails to disclose the pump used in an ink jet printer.

Regarding claim 16, TAKEHIKO teaches:

- An inkjet printer comprising:
- an inkjet head (1) that ejects ink toward a recording medium (see Figures 1 and 4, and see ABSTRACT and Page 2);
- an ink tank (18, 13) that contains ink (2) for supplying the inkjet head (see Figure 1).

Regarding claim 18, TAKEHIKO teaches:

- a metal needle (16) having a fluid passage inside (see Figure 1) is directly connected to the first through hole (see Figure 1) and a tip of the needle is stuck in the ink tank (see Figure 1).

Regarding claim 21, TAKEHIKO teaches:

- when the rotor is stopped at a rotational position when the pump is not in operation, the rotor has a passage that provides communication between the first through hole and the second through hole with the rotor stopped at the rotational position (see ABSTRACT), and when ink is ejected from the inkjet head with the rotor stopped at the rotational position, ink is supplied from the ink tank via the passage to the inkjet head (see ABSTRACT and Figure 1).

Furthermore, TAKEHIKO teaches that a pump is used in an ink jet printer in order to provide ink when the ink is below a specific level. During normal operations, TAKEHIKO teaches that the pump does not rotate and the rotor stops at a rotational

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position where there is communication between the first through hole and the second through hole in order to provide ink to the head, since an ink jet printer supplies ink to the head normally by negative pressure (see ABSTRACT and patent publication of TAKEHIKO).

It would have been obvious to a person having ordinary skill in the art at the time of the invention was made to have used the pump of NAKAMURA, OSTBERG, and ADORJÁN in an ink jet printer, since it requires only routine skill in the art to change the type of pump used in an apparatus. Furthermore, it would be obvious to stop the rotor at a position which provides communication between the first and second through holes in any of the pumps of NAKAMURA, OSTBERG, and ADORJÁN, so that the negative pressure is used to supply the ink to the ink head in an ink jet printer, and thus, no energy is used for the pumping operation (see ABSTRACT and patent publication of TAKEHIKO).

16. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over any one of the following modified pumps for use in an ink jet printer: NAKAMURA, OSTBERG, or ADORJÁN as applied to claim 16 above, and further in view of either one of HINO (U.S. Patent 6,561,637 B2) or MARUYAMA (U.S. Patent 4,380,770).

The modified ink jet printer system of NAKAMURA, OSTBERG, and ADORJÁN discloses the claimed invention, including an ink passage connecting the pump and the inkjet head is formed with a portion that is connected to the second through hole (see TAKEHIKO Figure 1). However, the modified ink jet printer system of NAKAMURA,

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OSTBERG, and ADORJÁN fails to disclose the second through hole faces vertically and a filter is placed horizontally. HINO and MARUYAMA teach filters in an ink jet printer (see (17f, 26) of HINO and Figures 5A and 6; see Figure 6 of MARUYAMA and Column 5, line 67—Column 6, line 14).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the second through hole on the upper vertical side of the case in any of the modified ink jet printer systems of NAKAMURA, OSTBERG, or ADORJÁN, in order to allow any gas bubbles to escape from the pump. In addition, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have a filter disposed in the portion between the second through hole and the inkjet head and placed in a horizontal position in the modified ink jet printer systems of NAKAMURA, OSTBERG, or ADORJÁN, in order to filter out any foreign particles prior to the ink reaching the inkjet head, and thus, reducing clogs in the inkjet head. It has been held that rearranging parts of an invention involves only routine skill in the art, and therefore, orientation of the second through hole in the vertical position and the filter to be in the horizontal position, or in any desired orientation, would require only routine skill in the art.

17. Claim 20 is rejected under 35 U.S.C. 103(a) as being obvious over any one of the following modified pumps for use in an ink jet printer: NAKAMURA, OSTBERG, or ADORJÁN as applied to claim 16 above.

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NAKAMURA, OSTBERG, and ADORJÁN disclose the claimed invention, as discussed above, however, fail to disclose the second through hole is formed on the upper vertical side of the case.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the second through hole on the upper vertical side of the case in any of the modified ink jet printer systems of NAKAMURA, OSTBERG, or ADORJÁN, in order to allow any gas bubbles to escape from the pump. Furthermore, it has been held that rearranging parts of an invention involves only routine skill in the art.

Double Patenting

18. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

19. Claims 1-2, 6-9, 14-16, and 21-25 are each rejected on the ground of nonstatutory double patenting over claim 4/1 of U. S. Patent No. 7,393,090 B2

since the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent.

The subject matter claimed in the instant application is fully disclosed in the patent and is covered by the patent since the patent and the application are claiming common subject matter, as follows: a pump including a case/housing having a hollow and including a first through hole/ink suction inlet which fluid is sucked into a hollow, a second through hole/ink discharge outlet through which the fluid is ejected from the hollow, a rotor that is rotatable in the hollow and having a rotary shaft/pump drive mechanism, a partition supported by the rotor, both ends of the partition in constant contact with the inner wall surface, and a fluid resistance between the first through hole and the second through hole is variable (it is inherent that the first through hole and the second through hole is variable, since claim 1 of patent 7,393,090 B2 discloses a control unit that performs a first control for controlling the pump drive mechanism to rotate the rotor at a rotating speed in which ink is supplied from the ink tank to the print head through the pump and ejected from the print head, and a second control for controlling the pump drive mechanism to stop the partition member at a position where flow resistance in a passage from the ink suction inlet to the ink discharge outlet becomes greater than during printing), an inkjet head/print head, and an ink tank.

Furthermore, there is no apparent reason why applicant was prevented from presenting claims corresponding to those of the instant application during prosecution of the application which matured into a patent. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

20. Claims 1-2, 6-9, 14-16, and 21-25 are each rejected on the ground of nonstatutory double patenting over claim 6/5/1 of U. S. Patent No. 7,360,878 B2 since the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent.

The subject matter claimed in the instant application is fully disclosed in the patent and is covered by the patent since the patent and the application are claiming common subject matter, as follows: a pump including a case/housing having a hollow and including a first through hole/ink suction inlet which fluid is sucked into a hollow, a second through hole/ink discharge outlet through which the fluid is ejected from the hollow, a rotor that is rotatable in the hollow and having a rotary shaft/pump drive mechanism, a partition supported by the rotor, both ends of the partition in constant contact with the inner wall surface, and a fluid resistance between the first through hole and the second through hole is variable (it is inherent that the first through hole and the second through hole is variable, since claim 1 of patent 7,360,878 B2 discloses a control unit that performs a first control for controlling the pump drive mechanism to rotate the rotor at a rotating speed in which ink is supplied from the ink tank to the print head through the pump and ejected from the print head, and a second control for controlling the pump drive mechanism to rotate the rotor at a rotating speed in which ink is not ejected from the print head, and therefore, is capable of performing the function of the fluid resistance between the first and second through hole is variable), an inkjet head/print head, and an ink tank.

Furthermore, there is no apparent reason why applicant was prevented from presenting claims corresponding to those of the instant application during prosecution of the application which matured into a patent. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

21. Claims 1-2, 6-9, 14-16, and 21-25 are each rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 6/1 of U.S. Patent No. 7,192,263 B2 in view of any one of NAKAMURA, OSTBERG, and ADORJAN.

Although the conflicting claims are not identical, they are not patentably distinct from each other because Patent 7,192,263 B2 comprises of: a pump including a case/housing having a hollow/cylindrical wall and including a first through hole/inlet port which fluid is sucked into a hollow/cylindrical wall, a second through hole/outlet port through which the fluid is ejected from the hollow/cylindrical wall, a rotor that is rotatable in the hollow/cylindrical wall, a partition/separating member supported by the rotor, both ends of the partition/separating member in constant contact with the inner wall surface, and a fluid resistance between the first through hole and the second through hole is variable (it is inherent that the first through hole/inlet port and the second through hole/outlet port is variable (claim 1 of patent 7,192,263 B2 discloses a curved face having a larger radius of curvature than the rotor is formed at a limited circumferential angular region at an outer peripheral surface of the rotor. It is inherent that this limited curved face produces a fluid resistance between the first through hole/inlet port and the second through hole/outlet port), an inkjet head, and an ink tank/ink cartridge.

However, patent 7,192,263 B2 fails to disclose the first through hole and the second through hole are on the same side with respect to the partition.

It would have been obvious to a person having ordinary skill in the art at the time of the invention was made to have the first through hole/inlet port and second through hole/outlet port on the same side of the partition in Patent 7,192,263 B3, since it requires only routine skill in the art to locate the first through hole/inlet port adjacent to the second through hole/outlet port, as evidence by NAKAMURA, OSTBERG, and ADORJAN.

Response to Arguments

22. Applicant's arguments with respect to the 35 U.S.C. § 102(b) and 35 U.S.C. §103(a) filed August 27, 2008 have been fully considered but they are not persuasive.

23. With regards to the 102(b) rejection of independent claims 1 and 16, applicant argues that references (NAKAMURA, OSTBERG, and ADORJAN) fails to disclose a pump which has a first through hole and the second through hole are on the same side with respect to the partition that the fluid resistance between the first through hole and the second through hole is variable. The claim language of "a fluid resistance between the first through hole and the second through hole is variable" is functional language.

The use of the functional language only requires that the apparatus is capable of performing the function. "[A]pparatus claims cover what a device *is*, not what a device *does*." *Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990). (See MPEP 2114). Furthermore, the broadest reasonable interpretation is used when interpreting the claim limitation. In the applicant's current application, the

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fluid resistance between the first through hole and the second through hole is variable, can be interpreted to mean in the current application that from Figure 4B to 4C, the fluid resistance is variable between Figure 4B and 4C, since Figure 4B has one fluid resistance between the first through hole and the second through hole that is different from the fluid resistance in Figure 4C, due to the rotation of the rotor and movement of the vane. Fluid resistance has been interpreted in the prior art of NAKAMURA and ADORJAN to mean the difference between the fluid resistance at the first through hole and at the second through hole. The current claim limitation does not include the limitation to a connection between the first through hole and the second through hole that causes the "fluid resistance" and that the "fluid resistance is variable" due to the connection and non-connection between the first and second through hole. Reciting positive structural limitations that the applicant's pump uses to meet this limitation or reciting a method claim disclosing how the applicant's apparatus works and varies "the fluid resistance" is recommended by the Examiner.

24. In response to the amendment of claims 1 and 16 to include the recitation of "a fluid resistance between the first through hole and the second through hole is variable during a printing operation and a purging operation", a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (see rejection above).

25. NAKAMURA does show the first and second through hole on the same side of the partition (see Figures 3A-3B). With regards to the functional language of "a fluid resistance between the first through hole and the second through hole is variable", NAKAMURA is capable of meeting this functional language. As shown in Figures 3A-3D, the rotor rotates the fluid resistance between the vane and first through hole and second through hole is variable. Using the broadest reasonable interpretation, the fluid resistance between the first through hole and the second through hole is variable, due to the rotation of the rotor and movement of the vane (see Figures 3A-3B, that show the difference in fluid volume due to the location of the rotor and vane during the rotor's rotation when the first and second through hole are on the same side of the partition). NAKAMURA also discloses it is used as a pump (see Column 1, ¶0001) that is capable of being variable during a printing operation and a purging operation, wherein in each operation, the pump is rotating.

26. OSTBERG does show the first and second through hole on the same side of the partition (see Figures 4 and 9). With regards to the functional language of "a fluid resistance between the first through hole and the second through hole is variable", OSTBERG is capable of meeting this functional language (see Figures 2, 4, 6, and 8-9 and Page 8, line 10 - Page 10, line 8). OSTBERG discloses movement of the wall in direction "A" due to excessive pressure or debris. The rotor rotates with the partition changing to positions shown in Figures 4 and 10, and therefore, OSTBERG is capable of varying the fluid resistance between the first through hole and second through hole when the first and second through holes are on the same side of the partition.

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OSTBERG also discloses it is used as a pump (see Page 1, line 3) that is capable of being variable during a printing operation and a purging operation, wherein in each operation, the pump is rotating.

27. ADORJAN does show the first and second through hole on the same side of the partition (see Figures 1 and 4). With regards to the functional language of "a fluid resistance between the first through hole and the second through hole is variable", ADORJAN is capable of meeting this functional language. As shown in Figures 1 and 4, the rotor rotates the fluid resistance between the vane and first through hole and second through hole is variable due to varying amounts of fluid acting on the vane during the rotation of the rotor. Using the broadest reasonable interpretation, the fluid resistance between the first through hole and the second through hole is variable, due to the rotation of the rotor causes a varying volume of fluid to be in contact with the first and second through hole. ADORJAN also discloses it is used as a pump (see Page 1, first full paragraph) that is capable of being variable during a printing operation and a purging operation, wherein in each operation, the pump is rotating.

Communication

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARY A. DAVIS whose telephone number is (571)272-9965. The examiner can normally be reached on Monday thru Thursday; 6:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Denion can be reached on (571) 272-4859. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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